

namco®

N e b u l a s R a y

OPERATION MANUAL

DISTRIBUTED BY:

NAMCO LIMITED
2-8-5 TAMAGAWA, OHTA-KU, TOKYO, 146, JAPAN

1. Cautions

- (1) Be sure to turn off the cabinet whenever installing or removing the PC board.
- (2) Be sure to use an edge connector which is applied to the JAMMA standard. Any modifications such as cutting the edges of PC boards will cause a failure and also will be out of our guarantee for repair.
- (3) Never test the PC boards for conductivity with a multimeter or similar device. The PCB contains sensitive chips which could be destroyed even by the internal voltage of such a device.
- (4) Foreign matters or dust on the PC boards will cause a failure. Turn off the power and clean the PC boards with a brush or similar thing.
- (5) When transporting the PC boards, wrap them with sponges or air caps and pack them in a cardboard box so that they can avoid a direct impact from outside during shipment.
- (6) For maintenance, contact your distributor.

2. Specifications

- (1) Control panel: One-side 2-P specifications
- 8-direction lever: 2 (1P, 2P, 1 each)
 - Button switch: 4 (1P, 2P, 2 each)
 - Start switch: 2 (1P, 2P, 1 each)

- (2) PC board size: 310 x 360 mm

- (3) Direction of monitor: Vertical

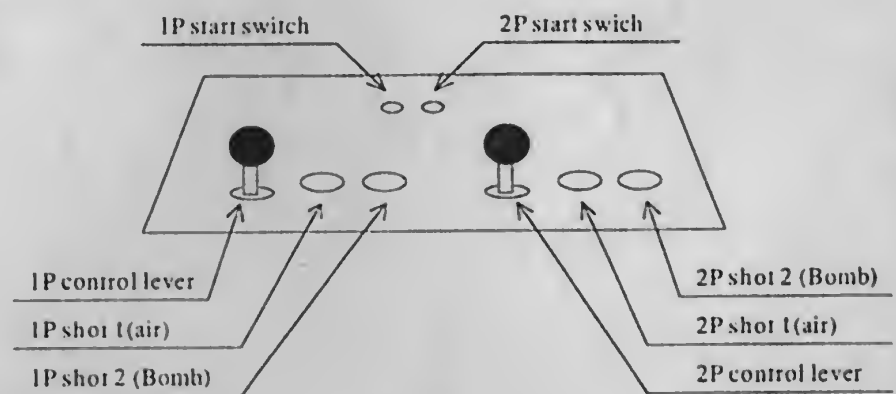


Fig. 1

3. Connection

- (1) Connection of control panel

See below to connect the control panel to the cabinet (See P3: PC board Connector Table).

- (2) Connection of PC board

Connect the PC board to the cabinet (see P3: PC Board Connector Table).

Using the PC board with a stereo cabinet allows you to enjoy a stereophonic effect (See P3: Connection to Stereo Cabinet).

4. Explanation of PC Boards

- (1) Option switches

No.1 to "ON" for Test Mode.

No.2 to "ON" for Screen Freeze.

Normally, all of the option switches are "OFF".

- (2) Speaker volumes

To decrease the sound volume of the speaker, turn the speaker volume counter-clockwise.

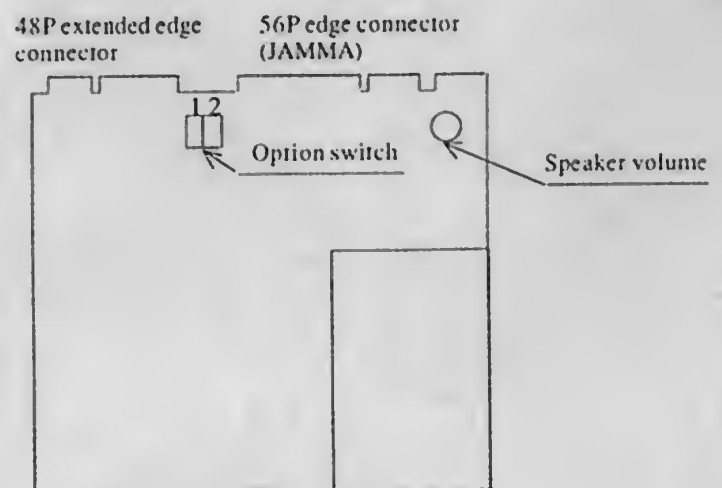


Fig. 2

Specified Connector

Use a DDK 225D-10024C2-2312 as a 48P extended edge connector.

5. Test Mode

(1) The PC Board enters the test mode by setting the test switch on the PC Board to "ON" on the game screen. And the test menu screen is displayed on the monitor. Use the test switch (For connection, see P3: PC Board Connector Table) on the cabinet or the option switch on the PC Board. (see P1: 4.(1) Option switches)

When an item is selected by operating the 1P control lever up and down and the 1P shot 1 switch is pushed, the selected test screen is displayed.

(2) Game fees can be changed on the coin option screen, and the game difficulty can be changed on the game option screen. Select an item by operating the 1P control lever up and down, and change its contents using the 1P shot 1 switch (see the option setting table). After that, push the 1P shot 2 switch to return to the test menu screen.

FLIP [OFF]	(a) The screen can be turned upside down by pushing the 1P shot 1 switch
SWITCH TEST	(b) Switch test screen
SOUND TEST	(c) Sound test screen
COIN OPTIONS	(d) Coin option screen (Setting of game fees)
GAME OPTIONS	(e) Game option screen (Setting of game difficulty)
UARTS TEST	(f) Not used
OBJECT TEST	(g) Not used
SCROLL TEST	(h) Scroll test screen
A.D.S.	(i) Game data display screen
COLOR TEST	(j) Color test screen (for monitor adjustment)
CONVERGENCE TEST	(k) Cross hatch pattern (for monitor adjustment)
RS-232C TEST	(l) Not used

(Test menu screen)

COIN OPTIONS [DEFAULTS IN GREEN]	
GAME COST :	(1)
1 COIN 1 CREDIT	
DISCOUNT TO CONTINUE :	(2)
NO	
COIN 1 MECH VALUE :	(3)
1 COIN COUNT AS 1 COIN	
COIN 2 MECH VALUE :	(4)
1 COIN COUNT AS 1 COIN	
COIN 3 MECH VALUE :	(5)
1 COIN COUNT AS 1 COIN	
COIN 4 MECH VALUE :	(6)
1 COIN COUNT AS 1 COIN	
BONUS FOR QUANTITY BUY IN :	(7)
NONE	
FREE PLAY :	(8)
NO	

(Coin Options screen)

GAME OPTIONS [DEFAULTS IN GREEN]	
DIFFICULTY LEVEL :	(9)
MEDIUM	
FIGHTER :	(10)
3	
EXTEND TYPE :	(11)
150,000 PTS.	
MUSIC IN ATTRACT :	(12)
YES	
SPEAKER OUT :	(13)
STEREO	
CREDIT MODE :	(14)
COMMON	
COIN COUNTER :	(15)
TYPE A : 1 COUNTER	

(Game Options screen)

(Option setting table)

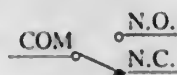
Item		Contents	
(1) Game fees	one count required for one game (one credit)	1 < [1-9]	
(2) DISCOUNT	50% discount when continuing a play	NO <, YES	
(3) COIN 1 MECH VALUE	Count per coin	1 < [1-9]	
(4) COIN 2 MECH VALUE	Count per coin	1 < [1-9]	
(5) COIN 3 MECH VALUE	Not used		
(6) COIN 4 MECH VALUE	Not used		
(7) BONUS COIN	One additional coin per the specified number of coins	NONE < 2 Coins Give 1 Coin 9 Coins Give 3 Coins	
(8) FREE PLAY	NO <, YES		
(9) DIFFICULTY LEVEL	MEDIUM < [VERYEASY, EASY, MEDIUM, HARD, VERY HARD]		
(10) FIGHTER	3 (Standard) <, [1, 2, 3, 4, 5,]		
(11) EXTEND TYPE	150,000PTS. < [150,000PTS, 300,000PTS, NO BONUS, 150,000-500,000PTS]		
(12) MUSIC IN ATTRACT	YES <, NO		
(13) SPEAKER OUT	STEREO <, MONO		
(14) CREDIT MODE	COMMON (Credit is common to 1P and 2P) < EACH ONE (Credit is set for 1P and 2P each)		
(15) COIN COUNTER	TYPE A : 1COUNTER (1Coin counter for 2slots) < TYPE B : 2COUNTERS (1Coin counter for each 1slot)		
Example	Game fees		(Note) Set (3, 4) corresponded to Coin Mech 1&2 in use.
	1 game	Continue	
	100 yen	100 yen	
	100 yen	50 yen	

6. PC Board Connector Table

JAMMA edge connector (56P 3.96 mm pitch)

Solder side	Terminal No.		Parts side
GND	A	1	GND
GND	B	2	GND
+5V	C	3	+5V
+5V	D	4	+5V
	E	5	
+12V	F	6	+12V
Insertion error preventing	H	7	Insertion error preventing
Coin counter 2	J	8	Coin counter 1
	K	9	Coin lockout 1
Speaker (-)	L	10	Speaker (+)
Audio (GND)	M	11	Audio (+)
Video GREEN	N	12	Video RED
Video SYNC	P	13	Video BLUE
Service switch	R	14	Video GND
	S	15	Test switch
Coin switch 2	T	16	Coin switch 1
2P start switch	U	17	1P start switch
2P lever UP	V	18	1P lever UP
2P lever DOWN	W	19	1P lever DOWN
2P lever LEFT	X	20	1P lever LEFT
2P lever RIGHT	Y	21	1P lever RIGHT
2P slot 1	Z	22	1P slot 1
2P slot 2	a	23	1P slot 2
	b	24	
	c	25	
	d	26	
GND	e	27	GND
GND	f	28	GND

- Do not connect anything to the blank connectors.
- Both lockout solenoid and coin counter operate on +12V.
- Connect the switches to N.O. terminals such as a microswitch, and the GND to the COM terminal.



- The supply voltage is available within $\pm 5\%$. For use in the best condition, get the supply voltage as close to the specified voltage as possible.

(Recommended power capacity)

+5V $\pm 5\%$	4.0A or more
+12V $\pm 5\%$	2.0A or more

Extended edge connector (48P 2.54 mm pitch)

Solder side	Terminal No.		Parts side
Speaker R (-)	A1	B1	Speaker R (+)
	A2	B2	
	A3	B3	
	A4	B4	
Insertion error preventing key	A5	B5	Insertion error preventing key
	A6	B6	
	A7	B7	
	A8	B8	
	A9	B9	
	A10	B10	
	A11	B11	
	A12	B12	
	A13	B13	
	A14	B14	
	A15	B15	
	A16	B16	
	A17	B17	
	A18	B18	
	A19	B19	
	A20	B20	
	A21	B21	
	A22	B22	
	A23	B23	
	A24	B24	

- Do not connect anything to the blank connectors.

[Connection to stereo cabinet]

(1) STEREO / MONO setting

Select the speaker output in the game option screen at the test menu screen.

<Caution> Monophonic cabinets do output only the left-hand sound even if the stereophonic setting is selected.

(2) Connection to speakers

- Connect the (L) speaker to the speaker output of 56P edge connector (JAMMA) on the PC board.
- Connect the (R) speaker to the (R) speaker output of 48P extended edge connector

* Use a DDK 225D-10024C2-2312 as a 48P extended edge connector.